

**SOUTHERN UNIVERSITY AND A&M COLLEGE
BATON ROUGE, LOUISIANA MATHEMATICS
DEPARTMENT OF MATHEMATICS**

**MATH 274
ELEMENTARY STATISTICS I**

I. DESCRIPTIVE INFORMATION

A. COURSE NUMBER AND TITLE: MATH 274 ELEMENTARY STATISTICS

B. TEXTBOOK:

Elementary Statistics A step by step approach by Allan Bluman, 4th Edition
Publisher: McGraw Hill

C. COURSE DESCRIPTION

The course is an introduction to basic descriptive analysis and mathematical concepts commonly used in Statistics. Topics discussed are frequency distribution, tables and graphs; measures of central tendency, dispersion, and position; probability distributions (binomial and Normal); Central Limit Theorem); Correlation, and Regression.

D. Intended audience

Statistics influences all facets of our society. Decisions in government, education, business, sports, politics, and many other fields are often based on statistical considerations. This course is designed for students that are majoring in those disciplines.

E. Instructor's emphasis

This course will provide students with the basic tools for obtaining and summarizing data in order to make statistical decisions.

F. CREDIT HOURS: 3

G. PREREQUISITE: At least two years of algebra, and a willingness to study.

H. INSTRUCTOR:

II. SPECIFICATION OF COURSE GOALS AND LEARNING OBJECTIVES

A. GENERAL GOALS

1. To engage students in the subject and to teach them that statistics is full of ideas and methods that will make them more informed users of the information they encounter in every day life.
2. To give the students the basic skills to design and execute experiments in an undergraduate research class.
3. To introduce the basic statistical concepts of statistics and reinforce them with activities that will make the concepts clear and vivid to the students.

III. LEARNING OUTCOMES

Upon completion of this course the students should be able to:

1. Name and define the two areas of statistics
2. Explain the differences between a population and a sample
3. Differentiate between a parameter and a statistic
4. Identify the four basic sampling techniques
5. Conduct both observational and experimental studies.
6. Critically assess the information presented regarding an observational study or experiment.
7. Identify types of data.
8. Identify different measurement levels.
9. Summarize graphically, numerically, and with a model the distribution of a variable.
10. Use statistical packages for conceptual understanding and analyzing data.
11. Learn how to read information from a pie chart and a bar graph
12. Understand when to use a frequency plot, or a histogram
13. To distinguish between the various measures of center of location.

14. To distinguish between the various measures of variation or spread.
15. To distinguish between the various measures of position.
16. To use other methods, such as the box plot and five number summaries to examine data and see what they reveal.
17. Define a probabilistic experiment and use the laws of probability to solve probability problems
18. Identify distributions as symmetric or skewed.
19. Identify the properties of the standard normal distribution to find the area under the normal curve given various z-values; and also to find specific data values for given percentages.
20. Use the central limit theorem to solve problems involving sample means for large samples.
21. Use statistical techniques known as correlation and regression to determine whether there is a relationship between two variables.

IV. COURSE CONTENTS

Chapter 1 The nature of Probability and Statistics

- 1.2 Descriptive and inferential Statistics
- 1.3 Variables and types of data
- 1.4 Data collection and sampling techniques
- 1.5 Observational; and Experimental Studies

Chapter 2 Frequency Distributions and Graphs

- 2.1 Organizing Data
- 2.2 Histograms, Frequency Polygon, and Ogives
- 2.3 Other types of graphs

Chapter 3 Data Description

- 3.1 Measures of Central Tendency
- 3.2 Measures of variation
- 3.3 Measures of position
- 3.4 Exploratory Data Analysis

Chapter 4 Probability and Counting Rules

- 4.1 Sample Spaces and Probability
- 4.2 The Addition Rules for Probability
- 4.3 The Multiplication Rules and Conditional Probability
- 4.4 Counting Rules

Chapter 5 Probability Distributions

- 5.1 Probability distributions
- 5.2 Mean, Variance, and Expectation
- 5.3 The Binomial Distribution

Chapter 6 Normal Distribution

- 6.1 Properties of the Normal Distribution
- 6.2 The Standard Normal Distribution
- 6.3 Applications of the Standard Normal Distribution
- 6.4 The Central limit Theorem
- 6.5 The Normal Approximation to the Normal Distribution

Chapter 10 Correlation and Regression

- 10.1 Scatter plots
- 10.2 Correlation
- 10.3 Regression
- 10.4 Coefficient of Determination and Standard Error of the Estimate

V. READINGS

1. Elementary Statistics by Mario Triola, Pub. Addison-Wesley
2. Elementary Statistics, 10th Edition by Johnson & Kuby; Pub. Brooks/Cole

VI. COURSE REQUIREMENTS

A. ACADEMIC

Quizzes and tests will be given throughout this semester. The final grade for each student will be determined according to the scheme set under Students Evaluation.

B. ADMINISTRATIVE

Students are expected to be on time for classes. Absences do not relieve any student from any class work. Make-up tests or quizzes will be given to students with legitimate excuses.

C. ACADEMIC DISHONESTY

Adhere to honesty and integrity in work submitted for credit in this course and adheres to SUBR's Code of Conduct. (Refer to current Catalog.)

D. DISABILITY STATEMENT:

Students that are considered as having a disability are to provide the professor with a letter from the Department of Special Education stating the appropriate accommodations required of this course. If you have a documented disability, then please discuss it with personnel at 771-3950 in Room 125 of Blanks Hall.

E. SUGGESTED OR REQUIRED READING: See professor.

F. GRADING POLICY: See professor.